Remarks

The above Amendments and these Remarks are in reply to the Office action mailed October 20, 2003. Claims 1-5, 7-22, 36-40 and 45-49 are presented herewith for consideration.

I. Summary of the Examiner's Rejections

Claims 1-3, 5, 14, 19, 20-22, 36-39 and 45-47 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,612,494 ("*Shibano*") in view of U.S. Patent No. 5,945,980 ("*Moissev*").

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of U.S. Patent No. 6,188,294 ("*Ryan*").

Claim 7, 8, 10-13, 17, 18, 40, 48 and 49 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of U.S. Patent No. 5,606,515 ("*Mockapetris*").

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano*, *Moissev*, and *Mockapetris* as applied to claims 1 and 7, and further in view of U.S. Patent No. 5,345,824 ("*Sherman*").

Claims 15 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of *Sherman*.

II. Summary of the Amendments

Claims 1, 36, 45, 48, and 49 have been amended. No new matter has been added by the amendments.

III. Response to Rejections under 35 U.S.C. § 103(a)

It is respectfully submitted that there is no reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the relevant field of invention would combine the cited references as suggested by the Examiner, and furthermore, that even if the references are combined, the resulting combination fails to teach or suggest each of the limitations of claims 1-5, 7-22, 36-40 and 45-49.

There is no suggestion or motivation to combine the cited references

It is respectfully submitted that no suggestion or motivation to combine *Shibano* and *Moissev,* as suggested by the Examiner, has been shown, and furthermore, that there is no suggestion or motivation in the relevant field of art to combine the references.

The Examiner has combined the references, stating only that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to include output having a first polarity sense pulse and a second polarity sense pulse as taught by Moissev et al. into Shibano for the purpose of increasing the sensing characteristics of the sensor thereby increasing the functionality of the sensor." *Office Action*, p. 3. There is no statement of an explicit or implicit suggestion in either reference, or an implicit motivation in the knowledge generally available to one of ordinary skill in the art, whereby one would be led to combine the references as suggested. It is respectfully submitted that the Examiner has merely provided a conclusion of obviousness to combine the references without setting forth a suggestion or motivation in either reference or the art to make the proposed combination.

It is further submitted that there is no suggestion or motivation to combine the references. While *Shibano* is directed to a "capacitive-type electrostatic servo acceleration sensor," *Moissev* is in a very distinct field of endeavor directed to a "touchpad with active plane for pen detection." *Shibano*, title; *Moissev*, title (*emphasis added*). *Shibano* seeks to provide a way of "detecting applied acceleration with high sensitivity and with low error without needing an accurate oscillator." *Shibano*, abstract. *Moissev*, on the other hand, seeks to provide a mechanism that "allows the same touchpad to sense both a finger and a stylus with the same circuitry." *Moissev*, col. 1, ll. 57-59. More specifically, *Moissev* recognizes a problem with prior art touch-pad devices, namely that when using a stylus instead of a human finger on the touchpad, a "different system has to be used" because the "stylus may be made of a plastic or other material which is non-conductive." *Id.* at ll. 29-32. The prior art simulates a finger by "providing an active stylus, which has an electrical circuit in it." *Id.* at ll. 32-35. *Moissev's* solution is to provide "pulses to an entire active plane (normally a ground plane), instead of the stylus." *Id.* at ll. 41-43.

There is no explicit or implicit statement in either reference to make the combination suggested by the Examiner. Neither *Moissev* nor *Shibano* provides any suggestion to combine a touchpad sensor with a servo-acceleration sensor. Furthermore, one of ordinary skill in the art would

not be motivated to combine teachings directed to a "capacitance-type electrostatic servo acceleration sensor" with teachings directed to a "touchpad with active plane for pen detection." The problems and solutions set forth in each disclosure are distinct and thus, no motivation in the art or the references exists.

As there is no reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination proposed by the Examiner, a prima facie case of obviousness cannot be established.

A. Claims 1-3, 5, 14, 19, 20-22, 36-39, and 45-47

Claims 1-3, 5, 14, 19, 20-22, 36-39 and 45-47 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* in view of *Moissev*. It is respectfully submitted that even if the references are combined in the manner suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claims 1-3, 5, 14, 19, 20-22, 36-39 and 45-47.

Claims 1-3, 5, 14, 19, and 20-22

It is respectfully submitted that the combination of *Shibano* and *Moissev* fails to teach or suggest:

> "a sense pulse generator having an output , said output having a *first polarity sense pulse during a first sampling period* and a *second polarity sense pulse during a second sampling period,*" as recited in amended claim 1 (*emphasis added*).

Shibano, as recognized by the Examiner (*see Office Action*, p. 2) and set forth in Applicants' Response A dated July 21, 2003, fails to teach or suggest this limitation. The outputs of the pulse generator of *Shibano* have the same polarity over different sampling periods.

It is respectfully submitted that *Moissev* fails to cure the identified deficiency of *Shibano*. *Moissev* discloses an "active plane pulse generator 35, to produce a pulse signal 39 to active plane 20." *Moissev*, col. 3, ll. 36-40. The referenced pulse of *Moissev* is a "pulse waveform 39 applied to the active plane" so that the location of a non-active stylus on a touchpad can be detected. *Id.* at ll. 44-46. Nothing within this portion of *Moissev* suggests a sense pulse signal that includes "a first polarity sense pulse during a first sampling period and a second polarity sense pulse during a second

sampling period," as recited in claim 1. As illustrated in FIG. 5, the pulse signal of *Moissev* includes a repeating pulse that appears to be positive throughout operation. There is no mention of a first polarity during a first sampling period and a second polarity during a second sampling period.

Moissev, in FIG. 6, illustrates various waveforms ("no-touch," "pen," and "finger") that result from applying the pulse signal of FIG. 5 to an active plane of a touchpad. As further cited by the Examiner, *Moissev* states that "[b]y alternately reversing the polarity of the pulses on line 39, both the finger and the pen would reduce the peak waveform, producing a similar effect." *Id.* at ll. 59-62 (*emphasis added*).

Moissev's teachings at this point are at best unclear. It is unclear whether *Moissev* uses "alternately" to mean an alternative to waveform 39 with all pulses being negative during all periods, or to mean periodically reversing the polarity of the pulses. It appears that *Moissev* is teaching an alternate to waveform 39 of FIG. 5, namely a waveform with the polarity of all the pulses reversed during all periods so that "both the finger and the pen would reduce the peak waveform." *Id.* This would be an alternative to a positive polarity that causes the finger to decrease the waveform and the pen to increase the waveform as illustrated in FIG. 6. *Moissev* would be teaching to use either waveform 39 during all periods or a waveform with the polarity of every pulse reversed during all periods. This is clearly not a teaching or suggestion of "a first polarity sense pulse during a first sampling period and a second polarity sense pulse during a second sampling period," as recited in claim 1.

The Examiner asserts, however, that *Moissev's* teaching of "by alternately reversing the polarity" is in fact a teaching of a first polarity during a first sampling period and a second polarity during a second sampling period. Although *Moissev* is unclear, it is respectfully submitted that one of ordinary skill in the art would not read *Moissev* as teaching or suggesting this interpretation, given *Moissev's* subsequent teachings. *Moissev* states, in the same paragraph and directly following the cited portion, that "by varying the phase and amplitude of the active plane pulses, the amplitude of the effect of either a finger or a pen can be made similar. Preferably, the amplitude variation for both the pen and a finger is within the same amplitude range so that the same circuitry can be used to detect both." *Id.* at col. 3, ll. 62-67.

If the cited portion is read as to vary the polarity of the signal over two periods, as we understand the Examiner to assert, a positive polarity during a first period would cause the amplitude

with the pen applied to increase, and a negative polarity during a second period would cause the amplitude with the pen applied to decrease. This is not consistent with *Moissev's* teaching that it is preferable that "the amplitude variation for both the pen and a finger is within the same amplitude range so that the same circuitry can be used to detect both." *Id.* Under this interpretation, *Moissev* would be teaching a scheme that causes a variation in the amplitude resulting from application of just the pen. The circuitry would not only have to detect different amplitudes resulting from a pen and a finger, but also multiple amplitudes for just the pen. Such a reading is inconsistent with a teaching that "[p]referably, the amplitude variation for both the pen and a finger is within the same amplitude range so that the same circuitry can be used to detect both." *Id.*

Accordingly, it is respectfully submitted that one of ordinary skill in the art would read *Moissev* as teaching an alternative having all pulses reversed during all periods and not teaching or suggesting "a first polarity sense pulse during a first sampling period and a second polarity sense pulse during a second sampling period," as recited in claim 1.

Hence, even if *Moissev* is combined with *Shibano* as suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claim 1. Accordingly, it is respectfully submitted that claim 1 is patentable over the cited art under 35 U.S.C. § 103(a). Claims 3, 5, 14, 19, and 20-22 each ultimately depend from claim 1 and therefore, should be patentable for at least the same reasons as claim 1.

Claims 36-39

It is further submitted that the combination of *Shibano* and *Moissev* fails to teach or suggest:

> "a sense pulse generator coupled to said sense capacitor and having an output, said sense pulse generator comprising control circuitry, said control circuitry causing the *sense pulse polarity at the output to invert over two sampling periods*," as recited in claim 36 (*emphasis added*).

The Examiner recognizes, with respect to claims 1, 45, and 46 that *Shibano* fails to disclose "the output having a first polarity sense pulse and a second polarity sense pulse," but then states with respect to claim 36, that *Shibano* "discloses a sense pulse generator with an inverting polarity over two phases." *Office Action*, p. 2; p. 3. It is respectfully submitted that if *Shibano* fails to disclose a

"first polarity sense pulse and a second polarity sense pulse," as stated by the Examiner, *Shibano* cannot disclose an "inverting polarity over two phases," or "causing the sense pulse polarity at the output to invert over two sampling periods," as recited in claim 36.

Furthermore, *Shibano* does not teach or suggest "causing the sense pulse polarity at the output to invert over two sampling periods," as recited in claim 36. *Shibano* discloses a sense pulse generator that has two outputs, Vsa1 and Vsa2. *See generally* FIG. 1, element 7; col. 6, ll. 9-67. During the "measurement mode period between instant t0 and instant t1," Vsa1 = VB and Vsa2 = 0. *Id.* at col. 6, ln. 60 – col. 7, ln. 5. During the period "between instant t1 and instant t2," Vsa1=0 and Vsa2=VB. *Id.* at col. 7, ll. 19-34. Hence, each output of *Shibano's* pulse generator maintains the same polarity, cycling between VB and 0 between measurement periods. There is nothing to suggest "control circuitry causing the sense pulse polarity at the output to invert over two sampling periods" as recited in claim 36.

As set forth above, it is submitted that *Moissev* discloses a "pulse waveform 39 applied to the active plane" having positive pulses during all periods and an alternative where the polarity is reversed during all periods. *Moissev*, however, does not teach or suggest a first polarity sense pulse during a first sampling period and a second polarity sense pulse during a second sampling period, or "causing the sense polarity to invert over two sampling periods," as recited in claim 36 (*emphasis added*).

Accordingly, the teachings of *Shibano* and *Moissev*, alone or in combination, fail to teach or suggest each of the limitations of claim 36. Thus, it is respectfully submitted that claim 36 is patentable over the cited art under 35 U.S.C. § 103(a). Claims 37-39 each ultimately depend from claim 36, and therefore, should be patentable for at least the same reasons as claim 36.

Claims 45-47

It is further submitted that the combination of *Shibano* and *Moissev* similarly fails to teach or suggest:

> "providing a plurality of sense pulses from the output of a sense pulse generator having *a first polarity to a sense capacitor during a first sampling period* to obtain a first output of the sense transducer; and

providing a plurality of sense pulses from the output of a sense pulse generator having *a second polarity to a sense capacitor during a second sampling period* to obtain a second output of the sense transducer," as recited in claim 45 (*emphasis added*).

As set forth above, *Shibano* teaches each output of a sense pulse generator having the same polarity sense pulse over different measurement periods while *Moissev* teaches a pulse waveform applied to an active plane that has the same polarity during detection. Nothing within either reference, individually or in combination, teaches or suggests sense pulses "having a first polarity ... during a first sampling period" and "having a second polarity ... during a second sampling period," as recited in claim 45.

Because the combination of *Shibano* and *Moissev* fails to teach or suggest every limitation of claim 45, it is respectfully submitted that claim 45 is patentable over the cited art under 35 U.S.C. § 103(a). Claims 46-47 each ultimately depend from claim 45 and should be patentable for at least the same reasons as claim 45.

B. Claim 4

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of *Ryan*. *Ryan* is cited for the disclosure of a "random sequence generator utilizing a capacitor as a storage device for a capacitive sensing circuit." *Office Action*, p. 4.

Claim 4 is dependent from claim 1. As set forth with respect to claim 1, the combination of *Shibano* and *Moissev* fails to teach or suggest each of the limitations of claim 1. Hence, even if the random sequence generator of *Ryan* is combined with *Shibano* and *Moissev*, the resulting combination fails to teach or suggest every limitation of claim 4. Accordingly, it is respectfully submitted that claim 4 is patentable over the cited art under 35 U.S.C. § 103(a).

C. Claims 7, 8, 10-13, 17, 18, 40, 48, and 49

Claim 7, 8, 10-13, 17, 18, 40, 48 and 49 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of *Mockapetris*. *Mockapetris* is cited for the disclosure of "circuitry for providing alternating current excitation waveforms for transducers

including an analog to digital converter coupled to storage means and coupled to a demodulator with an input and output." *Office Action*, p. 4.

Claims 7, 8, 10-13, 17, and 18, 40, and 48

It is respectfully submitted that claims 7, 8, 10-13, 17, and 18, 40, and 48 are not obvious in view of the combination of *Shibano* and *Moissev*, when further combined with *Mockapetris*. Claims 7, 8, 10-13, 17, and 18 each ultimately depend from claim 1, claim 40 depends from claim 36, and claim 48 ultimately depends from claim 45. As set forth above, the combination of *Shibano* and *Moissev* fails to teach or suggest each of the limitations of claim 1, 36, and 45. Accordingly, even if *Mockapetris* is combined with *Shibano* and *Moissev*, the resulting combination suggested by the Examiner fails to teach or suggest every limitation of claims 7, 8, 10-13, 17, and 18, 40, and 48. Thus, it is respectfully submitted that claims 7, 8, 10-13, 17, 18, 40, and 48 are patentable over the cited art under 35 U.S.C. § 103(a).

Claim 49

It is respectfully submitted that claim 49 is not obvious over *Shibano* as modified by *Moissev*, in view of *Mockapetris*. The Examiner recognizes that "*Shibano* as modified does not disclose a demodulation circuit coupled to the storage device" and thus, asserts that *Mockapetris* discloses circuitry "including an analog to digital converted coupled to storage means and coupled to a demodulator with an input and output." *Office Action*, p. 4. It is respectfully submitted, however, that *Shibano*, *Moissev*, and *Mockapetris*, alone or in combination, fail to teach or suggest:

> "a first magnitude sense pulse of a *first polarity during a first sampling period* and a second magnitude sense pulse of *a second polarity during a second sampling period*," as recited in claim 49 (*emphasis added*).

As set forth above, *Shibano* discloses sense pulses having the same polarity over measurement periods while *Moissev* discloses a pulse waveform having a single polarity during operation. Hence, even if *Mockapetris* is combined with *Shibano*, as modified by *Moissev*, in the manner suggested by the Examiner, the resulting combination fails to teach or suggest every limitation of claim 49. Accordingly, it is respectfully submitted that Claim 49 is patentable over the cited art under 35 U.S.C. § 103(a).

D. Claim 9

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano*, *Moissev* and *Mockapetris* as applied to claim 1 and 7 above, and further in view of *Sherman*. *Sherman* is cited for the disclosure of "an accelerometer including a filter that includes a high pass characteristic." *Office Action*, p. 5. Claim 9 ultimately depends from claim 1. As set forth above, *Shibano*, *Moissev*, and *Mockapetris*, alone or in combination, fail to teach or suggest each of the limitations of claim 1. Hence, even if *Sherman* is combined with *Shibano*, *Moissev*, and *Mockapetris* in the manner suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claim 9. Accordingly, it is respectfully submitted that claim 9 is patentable over the cited art under 35 U.S.C. § 103(a).

E. Claims 15 and 16

Claims 15 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Shibano* and *Moissev* in view of *Sherman*. Claims 15 and 16 each ultimately depend from claim 1. As set forth above, the combination of *Shibano* and *Moissev* fails to teach or suggest each of the limitations of claim 1. Hence, even if *Sherman* is combined with *Shibano* and *Moissev* in the manner suggested by the Examiner, the resulting combination fails to teach or suggest of the limitations of claims 15 and 16. Accordingly, it is respectfully submitted that claims 15 and 16 are patentable over the cited art under 35 U.S.C. § 103(a).

IV. Conclusion

Based on the above amendments and these remarks, reconsideration of Claims 1 - 5, 7 - 22, 36 - 40 and 45 - 49 is respectfully requested.

The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, February 20, 2004.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: 2/20/2004 By: _____

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